SEQ ID No.	Source Organism	Element Name	Sequence
1	wheat	Em1a	TGCCGGACACGTGGCGCGA
2*	maize	ABRE1	TTCGAGAAGAACCGAGACGTGGCGGGC
3	maize	ABRE A	GCGCTCGCGCCACGTGGGCATGCCGCC
4	maize	Prolamin P-box	GGTTGTCACATGTGTAAAGGTGAAG
5	maize	Z2 and Z3 box	GATCATGCATGTCATTCCACGTAGATAA
6	CaMV	35S AS-2	GTGGATTGATGTGATATCTC
7*	CaMV	35S AS-1 (As-1)	TCCACTGACGTAAGGGATGACGCACAAT
8	*Agrobacterium T-DNA*	OCS ele	TGACGTAAGCGCTTACGTCA
9	tobacco	GCC-box	GACTAATGGCGGCTCTTATCTCAC
10	soybean	GH3 D1	GCCCTCGTGTCTCCTCAATAAGCTA
11	soybean	GH3 D3	GCAATCCTTTGTCTCAATAAGTTCCAC
12	soybean	P3	AAGGGAGACAACTTGTCTCCCA
13	pea	GT-1 rbcS3A	ATCTTGTGTGGTTAATATGGCTGC
14	Arabidopsis	TCA motif	CTTCATCTTCTTCCTCCACCAAACG
15	Arabidopsis	C-repeat/DRE	ATTTCATGGCCGACCTGCTTTTT
16	soybean	HSE	AGAAGCTTCCAGAAGCTTCTAGAAG
17	maize	ERE	ATGCACGAATTGACCATTCC
18	parsley	gln2 PR box	CATAAGAGCCGCCACTAAAATAAGACCG
19	wheat	HBP-1a	GGCCACGTCACCAATCCGCG
20	maize	A1 PROMOTER	CGGGTCAGTGTACCTACCAACCTTAAACAC
21	maize	Bz1 PROMOTER	CGTCTAACTGCGACTGGCAGGTGCGCAC
22	parsley	CHS promoter	ATCCGGTGGCCGTCCCTCCAACCTAACCT
23	rice tungro bacilliform virus	BoxII	CCAGTGTGCCCCTGG
24*	rice	phyA GT-2 (GT-2)	TAGGTTAATTATTGGCGGTAATTA
25	synthetic	GT-2 like	AAACGGTAAAAAAGCGGTAGATTACC
26	oat	Phy PF1	GAAATAGCAAATGTTAAAAATA
27	soybean	AT-com	AAAAATAATATTAATATTATATTGAAA
28	Arabidopsis	AG site	ATAAGCTTTACCATTAATGGTAAAGCTTGG
29	Arabidopsis	AP3 site	CAATACTTTCCATTTTTAGTAACTAAGCTT
30	Arabidopsis	TGAC motif	GGTATCGTTGACCGAGTTGACT
31	petunia	CAGT motif	TTGACAGTGTCACTTGACAGTGTCAC
32	maize	Dof1/Dof2	GATCAAAAAAGTGAGATC
33	parsley	pr2 oligomer II	ATTCAATAGTGTGCTAATTGTTTAAGAGTTG
34	barley	CE1	TGCCATTGCCACCGGCCCCCCA
35	soybean	H-box1	AGCAGACATGGTAGGCAGTGCA
36	bean	H-box2	TCACCTACCCTACTTCCTATCC
37	barley	lox1	AATCGTCATGAATGAAGTCATGTGACGGCT
38	tobacco	PR-2d	AGGGGCAGCTTCGACCTCCTTCTCC
39	synthetic	ROL6	TCAGAACACGCAAGTTGCCAGCTCACCCAAC
40	maize	SGB box 2/3	AGATATGCATGATCTTTAAC
41	maize	SGB box 6-8	TGCGGTTTCTTTTGGCACAAATGGCATGA
42	maize	MS-BS7 box1-3	AAATCTACCTCCAACCAACCCAGCTTTGTA
43	maize	MS-BS7 box22-24	ATCACACCAACTTATCACCTAGAAAAGCGA
44	soybean	AuxRE DR5	CCTTTTGTCTCCCTTTTGTCTC
45*	rice	PCNA IIA	CGAGGTGGGCCCGTAGGTGGGCCCGTAT
46	parsley	PAL1 Box E	TACCTTTTTACCCTTCATGTCATC
47	pea	myb26	GTCGACAAAAGTTAGGTTAGCAGGC
48	barley	GARE	GGCCGATAACAAACTCCGGCC
49	tomato	E8	TTTTATTCCCAACAATAGAAAGTCTTG
50	tobacco	E1RE	GATTTGGTCAGAAAGTCAGTCC
51	wheat	CA	GTAGTGCCACCAAACACAACATACCAAATTA
52	rape	napA	GATCCCACATACACATACACG
53	sunflower	HaG3-A -75	CAGCTCCAAATGGTGATCTTCTCCTGG
54	sunflower	HaG3-A -111	TATACAGATGTAGCATGTCT
55	maize	Prolamin box	TTGACGTGTAAAGTAAATTTACAAC
56	pea	TGAC-like	GACACGTAGAATGAGTCATCAC
57	maize	SP20+6	GTCCCTCTCCCGTCCCAGAGAAACCC
58	tobacco	MSA RT1	TGTCCCCCAACGGTCTTATT
59*	Arabidopsis	DRE rd29A1 (DRE 1)	ATATCATACCGACATCAGTT
60	Arabidopsis	DRE rd29A2	ATATACTACCGACATGAGTT
61	Arabidopsis	CGF-1	GATAAAGATTACTTCAGATATAACAAACGTT
62	tobacco	ltp1 D1	TTCCCCTAGCTAGATACTTCATT
63	pea	ENBP1	CGATTATTGAGATATATAATAAATTAG
64	tomato	MRE	CGAAAACATACGCGCGAAATT

Figure 1

2-D Pooling of Transcription Factor Binding Sites (8 X 8)

Pool #	9	10	11	12	13	14	15	16
1	Em1a	ABRE1	ABREa	P-box	ZZZ3	As-2	As-1	Ocs
2	GCC	GH3D1	GH3D3	P3	GT-1	TCA	C/DRE	HSE
3	ERE	PRbox	HBP-1a	A1	Bz1	CHS	BoxII	GT-2
4	ROL	PF1	AT-com	AG	AP3	TGAC	CAGT	DOF
5	PR2	CE1	H-box1	H-box2	Lox1	PR-2d	ROL6	USA
6	USB	USC	USD	DR5	PCF	PAL1	myb26	GARE
7	E8	E1RE	CA	napA	HaG3.75	HaG3.111	P-box2	TGAC2
8	SP20+6	MSA	DRE1	DRE2	CGF1	ltp1D1	ENBP1	MRE
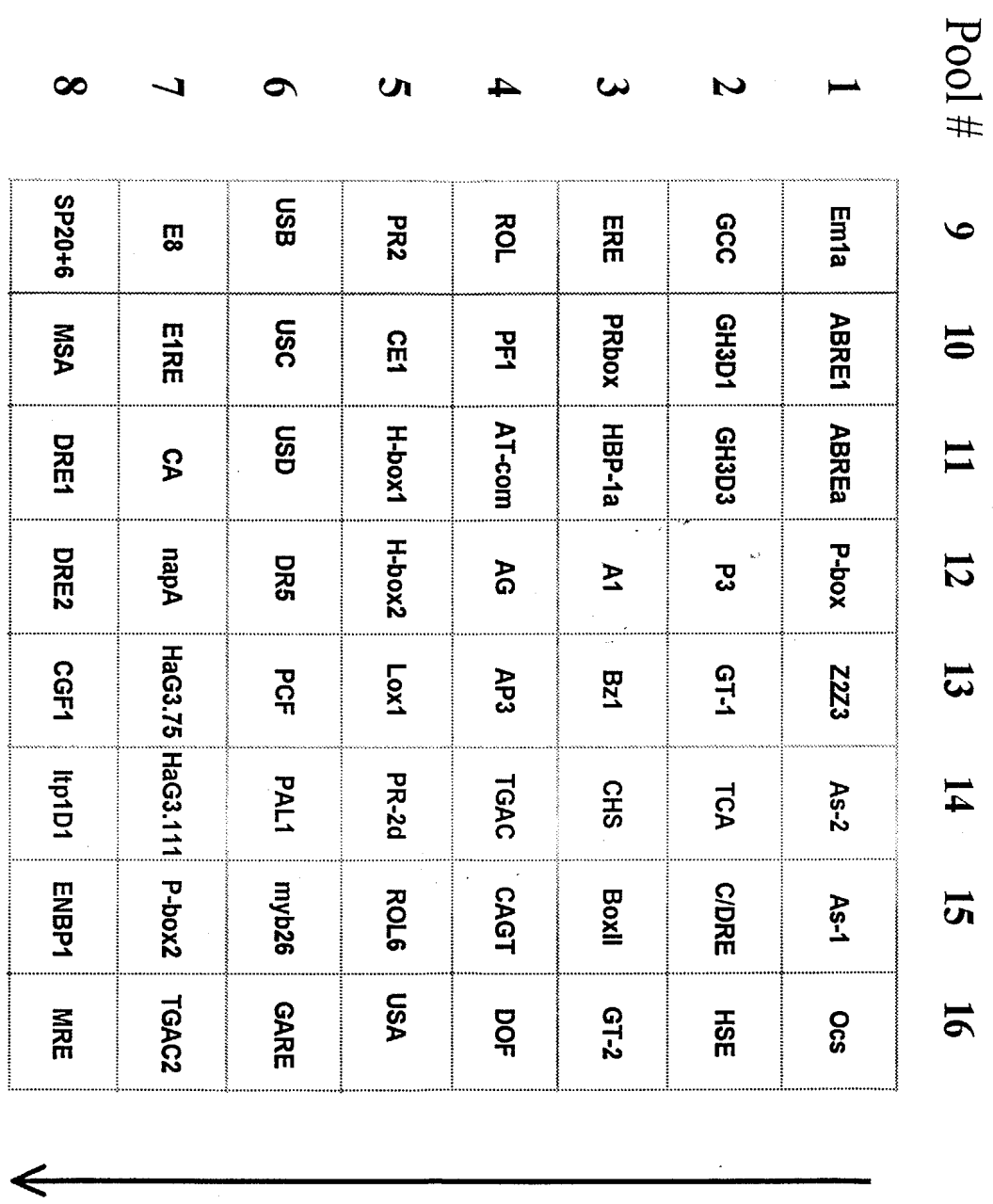
FIGURE 2

Strong Binding Activities in Maize Nuclear Extracts

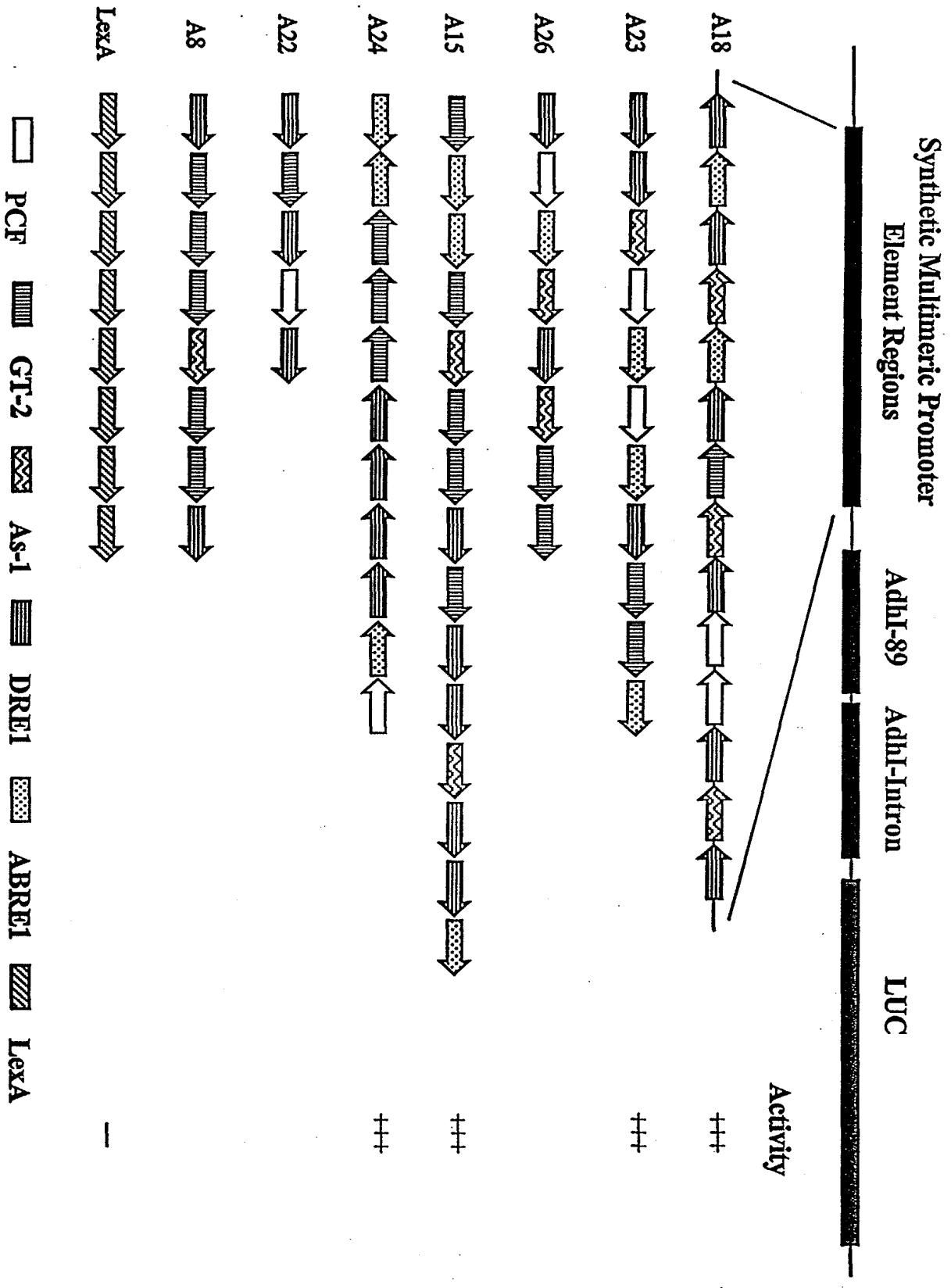|	9	10	11	12	13	14	15	16
1	Em1a	ABRE1	ABREa	P-box	Z2Z3	As-2	As-1	Ocs
2	GCC	GH3D1	GH3D3	P3	GT-1	TCA	C/DRE	HSE
3	ERE	PRbox	HBP-1a	A1	Bz1	CHS	BoxII	GT-2
4	ROL	PF1	AT-com	AG	AP3	TGAC	CAGT	DOF
5	PR2	CE1	H-box1	H-box2	Lox1	PR-2d	ROL6	USA
6	USB	USC	USD	DR5	PCF	PAL1	myb26	GARE
7	E8	E1RE	CA	napA	HaG3.75	HaG3.111	P-box2	TGAC2
8	SP20+6	MSA	DRE1	DRE2	CGF1	ltp1D1	ENBP1	MRE

FIGURE 3

Transient Assay for Multimers of Transcription Factor Binding Sites

FIGURE 4

FIGURE 5

Transient Assay for Multimers of Transcription Factor Binding Sites

Synthetic Multimeric Promoter Element Regions	AdhI-89	LUC	Activity

A42 ++

A69

A48 ++

A66

A51 ++

A44 ++

A65 ++

A56

A57

A64

LexA —

Legend:

☐ PCF   GT-2   As-1   DRE1   ABRE1   LexA

FIGURE 5
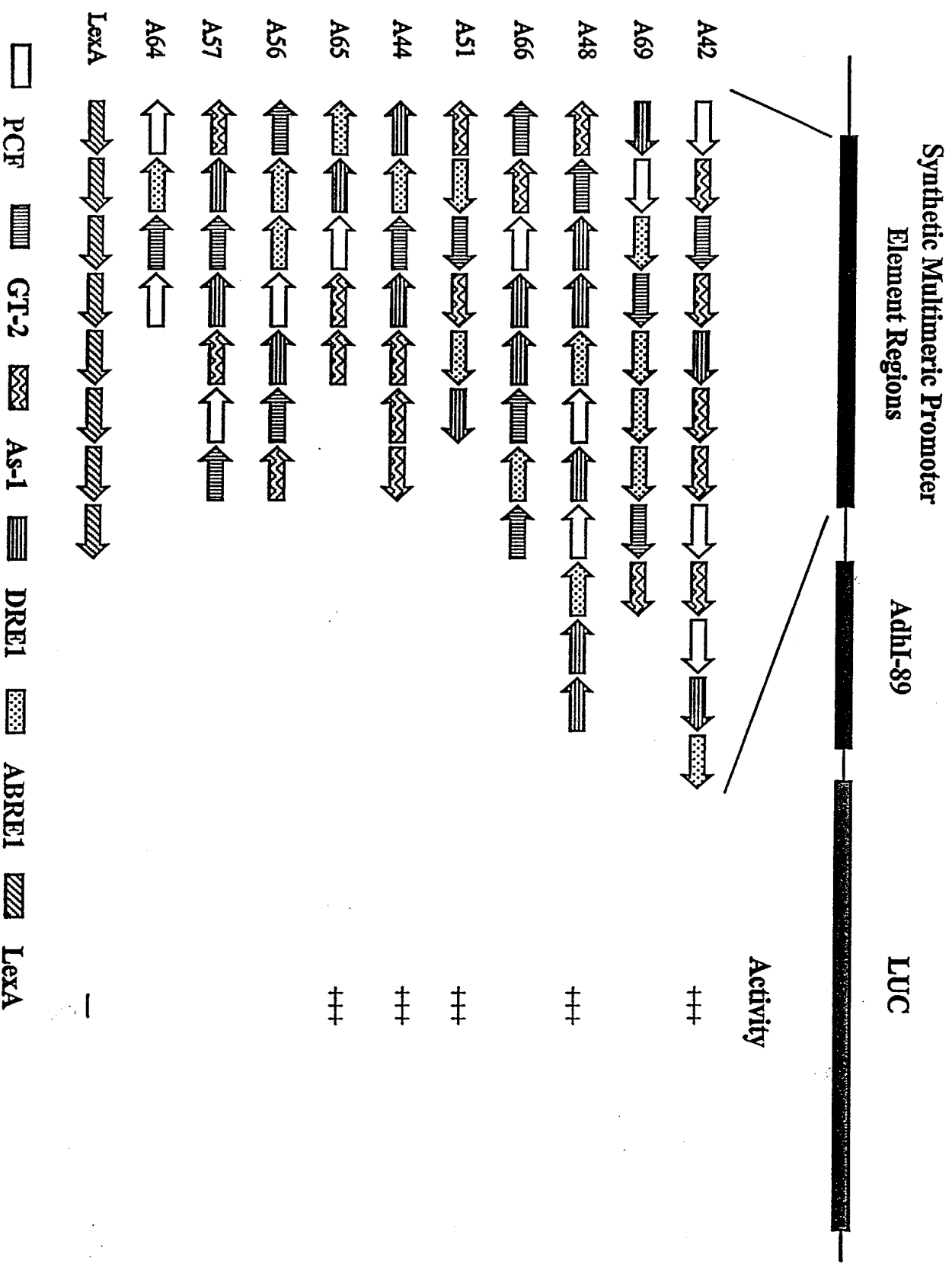
Figure 6a

Adh Intron Plus Constructs (root)
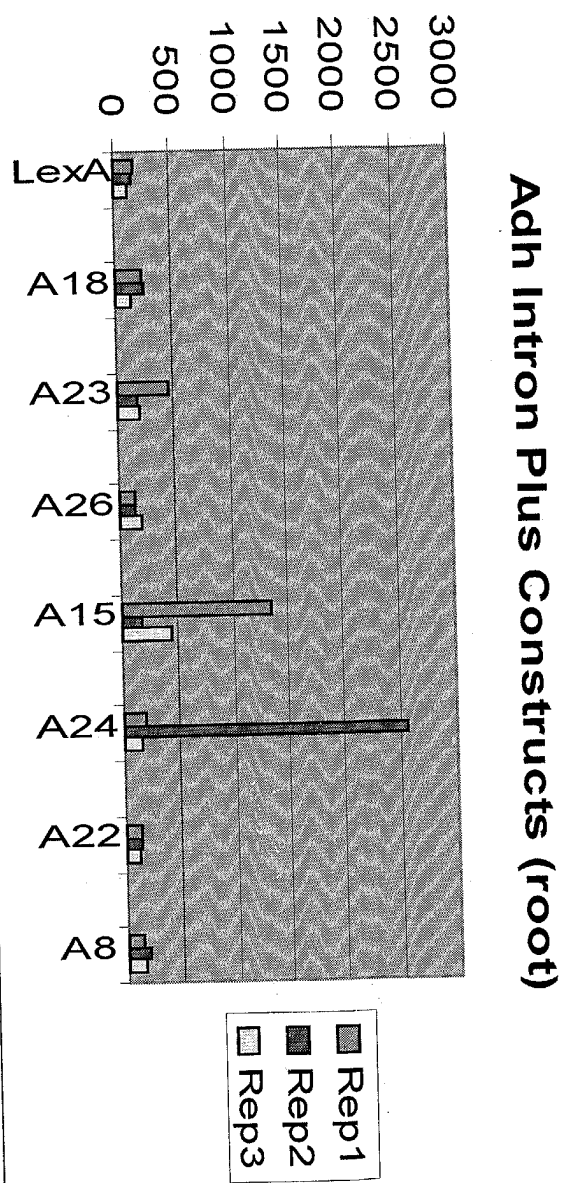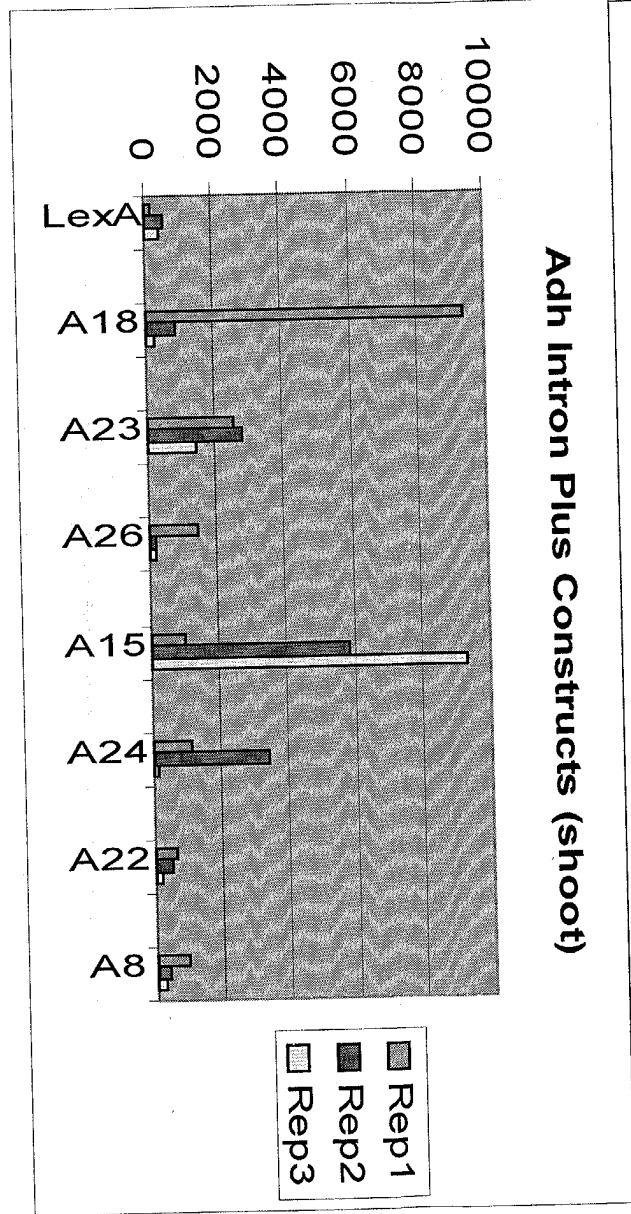
Figure 6b

Adh Intron Plus Constructs (shoot)

Figure 6c

Adh Intron Minus Constructs (root)

Bar chart with vertical axis labels: 0, 500, 1000, 1500, 2000

Horizontal categories: LexA, A42, A69, A48, A66, A51, A44, A65, A56, A57, A64

Legend: Rep1, Rep2, Rep3

Figure 6d

Adh Intron Minus Constructs (shoot)

Bar chart with vertical axis labels: 0, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500

Horizontal categories: LexA, A42, A69, A48, A66, A51, A44, A65, A56, A57, A64

Legend: Rep1, Rep2, Rep3
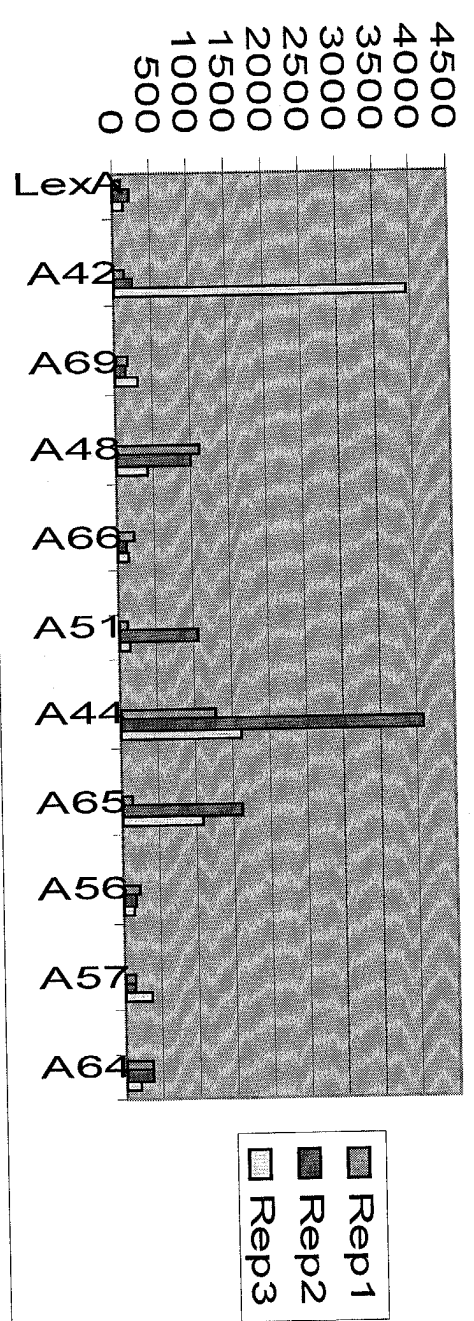
A15 (PHP14147)   413bp

```
              GT-2                                        ABRE1
      TAGGTTAATTTATTGGGCGGTAATTATATAGCTTCGAGAAGAACCGAGACGTGGCGGGCTAG
              ABRE1                               GT-2
      CTTCGAGAAGAACCGAGACGTGGCGGGCTAGCTAGGTTAATTATTGGCGGGTAATTATAG
              AS-1                                GT-2
      CTCCACTGACGTAAGGGATGACGCACAATTAGCTAGGTTAATTATTGGCGATAATTATAG
              GT-2                                DRE1
      CTAGGTTAATTATTGGCGGTAATTATAGCATATCATACCGACATCAGTTTAGCTAGGTTA
            GT-2                      DRE1                      DRE1
      ATTATTGGCGGTAATTATAGCATATCATACCGACATCAGTTTAGCATATCATACCGACAT
                        AS-1                        DRE1
      CAGTTTAGCTCCACTGACGTAAGGGATGACGCACAATTAGCATATCATACCGACATCAGT
              DRE1                        ABRE1
      TTAGCATATCATACCGACATCAGTTTAGCTTCGAGAAGAACCGAGACGTGGCG
```
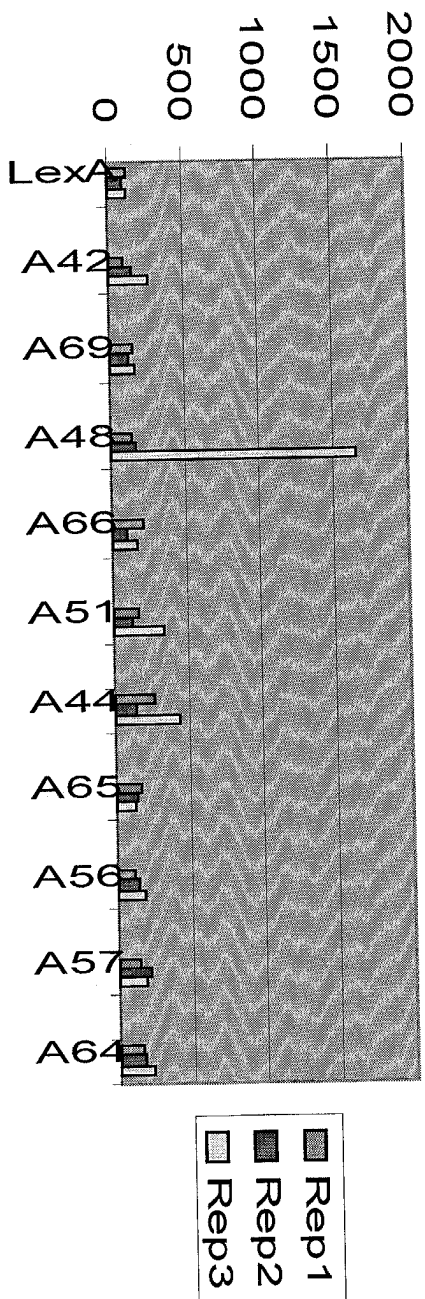
FIGURE 7

A18 (PHP14148)   392bp

<pre>
           DRE1   ABRE1
GCTAAACTGATGTCGGTATGATATGCTAGCCCGCCACGTCTCGGTTCTTCTCGAAGCTAAACTGA
DRE1   AS-1   ABRE1
TGTCGGTATGATATGCTAATTGTGCGTCATCCCTTACGTCAGTGGAGCTAGCCCGCCACGTCTCG
                 DRE1   GT-2
GTTCTTCTCGAAGCTAAACTGATGTCGGTATGATATGCTATAATTACCGCCAATAATTAACCTAG
     AS-1   DRE1
CTAATTGTGCGTCATCCCTTACGTCAGTGGAGCTAAACTGATGTCGGTAGATATGCTAATACGGG
    PCF   PCF
CCCACCTACGGGCCCACCTCGGCTAATACGGGCCCACCTACGGGCCCACCTCGGCTAAACTGATG
    DRE1   AS-1   DRE1
TCGGTATGATATGCTAATTGTGCGTCATCCCTTACGTCAGTGGAGCTAAACTGATGTCGGTATGA
TA
</pre>

FIGURE 8

A23 (PHP14149)   3.14bp

```
                   DRE1                              DRE1                    AS-1
TAGCATATCATACCGACATCAGTTTAGCATATCATACCGACATCAGTTTAGCTCCACTGACGTAA
                                    PCF1                              ABRE1
GGGATGACGCACAATTAGCCGAGGTGGGCCCGTAGGTGGGCCCGTATTAGCTTCGAGAAGAACCG
                                    PCF1                              ABRE1
AGACGTGGCGGGCTAGCCGAGGTGGGCCCGTAGGTGGGCCCGTATTAGCTTCGAGAAGAACTGAG
                                 DRE1                         GT-2
ACGTGGCGGGCTAGCATATCATACCGACATCAGTTTAGCTAGGTTAATTATTGGCGGTAATTATA
            GT-2                              ABRE1
GCTAGGTTAATTATTGGCGGTAATTATAGCTTCGAGAAGAACCGAGGACGTGGC
```

FIGURE 9

A24 (PHP14150)   278bp

          ABRE1   ABRE1   GT-2
TAGCTTCGAGAAGACGTGGCGGGCCGCCACGTCTCGGTTCTTCTCGAAGCTATAATTACCGCCAA
                              GT-2   GT-2
TAATTAACCTAGCTATAATTACCGCCAATAATTAACCTAGCTATAATTACCGCCAATAATTAACC
                DRE1   DRE1   DRE1
TAGCTAAACTGATGTCGGTATGATATGCTAAACTGATGTCGGTATGATATGCTAAACTGATGTCG

                                 DRE1   ABRE1
GTATGATATGCTAAACTGATGTCGGTATGATATGCTAGCCCGCCACGTCTCGGTTCTTCTCGAAG
          PCF
CTAATACGGGCCCACCTA

```
                    PCF                                          AS-1
CGAGGTGGGCCCGTAGGTGGGCCCGTATTAGCTCCACTGACGTAAGGGATGACGCACAATTAGCT
        GT-2                                 AS-1
AGGTTAATTATTGGCGGTAATTATAGCTCCACTGACGTAAGGGATGACGCACAATTAGCATATCA
    DRE1                              AS-1                          AS-1
TACCGACATCAGTTTAGCTCCACTGACGTAAGGGATGACGCACAATTAGCTCCACTGACGTAAGG
                                        PCF                     AS-1
GATGACGCACAATTAGCCGAGGTGGGCCCGTAGGTGGGCCCGTATTCCACTGACGTAAGGGATGA
                            PCF                          DRE1
CGCACAATTAGCCGAGGTGGGCCCGAGGTGGGCCCGTATTAGCATATCATACCGACATCAGTTTA
        ABRE1
GCTTCGAGAAGAACCGAGTCGAG
```

FIGURE 11

A44 (PHP14152)   198bp

　　　　　　　　　　DRE1　　　　　　　　　　　　　　　　　　　　ABRE1
<u>TAAACTGAT</u>GTCGGTATGATAATG<u>CC</u>AACCCGGCAACGTCCCGGTTCTTCTCGAA<u>GC</u>TATAATTA
　　　GT-2　　　　　　　　　　　　　　　DRE1　　　　　　　　　　As-1
CCGCCAATAATTAACCTAG<u>CT</u>A<u>AACTGAT</u>GTCGGTATGATAT<u>GC</u>TAATTGTGCGTCATCCCTTAC
　　　　　　　　As-1　　　　　　　　　　　　　　　　　　As-1
GTCAGTGGAG<u>CT</u>AATTGTGCGTCATCCCTTACGTCAGTGGAG<u>CT</u>CCACTGAACGTAAGGGATGAC
GTC

FIGURE 12

A48 (PHP14153)   30

AS-1   GT-2
TTGTGCGTCATCCCTTACGTCAGTGGAGTAATTACCGCCAATAATTAACCTAGCTAAACTGATGT
  DRE1   DRE1   ABRE1
CGGTATGATATGCTAAACTGATGTCGGTATGATATGCTAGCCCGCCACGTCTCGGTTCTTCTCGA
             PCF   DRE1
AGCTAATACGGGCCCACCTACGGGCCCACCTCGGCTAAACTGATGTCGGTATGATATGCTAATAC
      PCF   ABRE1
GGGCCCACCTACGGGCCCACCTCGGCTAGCCCGCCACGTCTCGGTTCTTCTCGAAGCTAAACTGA
  DRE1   DRE1
TGTCGGTATGATATGCTAAACTGATGTCGGTATGATATGCTA

FIGURE 13

A51 (PHP14154)   157bp

```
                AS-1                                    ABRE1
GTGCGTCATCCCTTACGTCAGTGGAGCTTCGAGAAGAACCGAGACGTGGCGGGCTAGCTAGGTTA
    GT-2                        AS-1                    ABRE1
ATTATTGGCGGTAATTATAGCTCCACTGACGTAAGAGCTTCGAGAAGAACCGAGACGTGGCGGGC
            DRE1
TAGCATATCATACCGACATCAGTTTAG
```

FIGURE 14